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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/439,055	11/12/1999	PETROS A IOANNOU	008764-20001	1183

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EXAMINER

HABERMEHL, JAMES LEE

ART UNIT PAPER NUMBER

2651

DATE MAILED: 06/25/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

CS

**Office Action Summary**

Application No.

09/439,055

Applicant(s)

IOANNOU ET AL.

Examiner

James L. Habermehl

Art Unit

2651

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 12 November 1999.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-17 is/are allowed.
- 6) ☒ Claim(s) 18-21 is/are rejected.
- 7) ☒ Claim(s) 22-24 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 February 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All   b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)                      4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)                      5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4-5, 7, 9-10.                      6) ☐ Other: \_\_\_\_\_

1. This Office action is in response to applicant's initial filing on 12 November 1999, formal drawings submitted 8 February 2001, and multiple IDS submissions, which papers have been placed of record in the file.

2. The corrected or substitute drawings were received on 8 February 2001.

These drawings are approved by the examiner, except as follows:

Figures 1-10 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

4. Claims 18-19 are rejected under 35 U.S.C. 102(e) as being anticipated by Despain et al. Despain et al. Figure 4 and col. 2, lines 9-13; col. 10, lines 5-16; col. 25, lines 24-67; col. 26, lines 39-60; and col. 28, lines 1-7 meet all the limitations of the claims, where col. 10, lines 5-16 show means responsive to the passage of servo signals for generating error signals, means responsive to the passage of data signals for generating error signals, and means responsive to the error signals to correct the position of the head.

Regarding the additional limitations of claim 19, col. 2, lines 9-13 show the sampling rate for the data signal error signals is substantially greater than the sampling rate for the servo signal error signals, which correspond to the "state-of-the-art" as described at col. 4, lines 11-40.

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 20-21 are rejected under 35 U.S.C. 103(a) as being obvious over Despain et al.

The applied reference has a common inventor and common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any

invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c).

Despain et al. Figure 4 and col. 2, lines 9-13; col. 10, lines 5-16; col. 25, lines 24-67; col. 26, lines 39-60; and col. 28, lines 1-7 meet all the limitations of the claims for the reasons given above regarding claims 18-19, except for showing the applied correction rate is greater than the first sampling rate and less than the second sampling rate, or that the first sampling rate, second sampling rate, and the correction rate are 60kHz, 15kHz, and 240kHz, respectively. Despain et al. Col. 26, lines 39-46 show the first sampling rate is about 8kHz to 10kHz. Despain et al. col. 28, lines 1-7 show the second sampling rate is in the range of (10,000)8kHz to 15,000(10kHz), or 80Mhz to 150Mhz, which is also the preferred embodiment's correction rate.

Reducing the correction rate to less than the maximum sampling rate where the reduced correction rate is still sufficient to meet desired system performance parameters is merely an obvious design choice based on standard, well-known engineering criteria, e.g., power consumption and cost v. computation speed. It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the error signals at a correction rate that is greater than the first

sampling rate and less than the second sampling rate, the motivation being to optimize engineering criteria such as power consumption and cost.

Setting the first sampling rate, second sampling rate, and the correction rate at 60kHz, 15kHz, and 240kHz, respectively, would have been obvious to one having ordinary skill in the art at the time the invention was made, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

7. Claims 1-17 are allowed over the prior art of record. Claims 22-24 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The following is a statement of reasons for the indication of allowable subject matter:

The prior art of record fails to disclose or suggest a control system wherein at least two values of the controlled variable correspond to a single value of the observable variable comprising inputting the first possible controlled variable value into a first estimator producing a first predicted observable variable value, inputting the second possible controlled variable value into a second estimator producing a second observable variable predicted value, and determining which of the predicted values more accurately corresponds to a second actual observable variable value, as presented in the environment of claims 1 and 5.

The prior art of record fails to disclose or suggest a servo control system comprising sampling an error rate function corresponding to a displacement of the controlled system to produce a positive value and a negative value, a first estimator responsive to the positive value to produce a first estimated value, a second estimator responsive to the negative value to produce a second estimated value, and using nonlinear logic responsive to the first and second estimated values to generate a displacement estimate, as presented in the environment of claim 9.

The prior art of record fails to disclose or suggest a servo control system comprising sampling the error rate of the servo control system to determine corresponding position error values, generating positive and negative estimates of the absolute values of the position error values, and using nonlinear logic to generate an estimate of an actual error signal based on the positive and negative estimates, as presented in the environment of claim 13.

The prior art of record fails to disclose or suggest a servo system for positioning a magnetic head relative to a track which has servo signals recorded therealong where generating the second set of error signals comprises producing a pair of possible position error signal values for each data track sample that are processed to choose the one that best estimates position error of the magnetic head relative to the track, as presented in the environment of claim 22.

The prior art of record fails to disclose or suggest a servo system for positioning a magnetic head relative to a track which has servo signals recorded

therealong where generating the second set of error signals comprises generating a possible error signal for each data track sample in succession and observing changes in sign and absolute value of the possible error signal during the succession of samples, as presented in the environment of claim 24.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to James L Habermehl whose telephone number is (703)305-6975. The examiner can normally be reached on 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Hudspeth can be reached on (703)308-4825. The fax phone numbers for the organization where this application or proceeding is assigned are (703)308-9051 for regular communications and (703)305-7201 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)305-0286.



Habermehl/jlh  
June 21, 2002



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